Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: July 14, 2006

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: NPDES Permits and Engineering Section / Permit Comments. **Please include the permit number in all comment letters.**

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by August 14, 2006 or received in our office by 5:00 p.m. on August 17, 2006. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, http://www.dnr.mo.gov/env/wpp/index.html, or at the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: July 14, 2006
Permit Number: MO-0121827
Southeast Regional Office

FACILITY NAME AND ADDRESS	NAME AND ADDRESS OF OWNER
Facility Name: AECI, St. Francis Power Plant Facility Address: Rt. 1, Box 441, Campbell, MO 63933	Owner: Associated Electric Cooperative, Inc. (AECI) Address: P.O. Box 754, Springfield, MO 65801
RECEIVING STREAM & LEGAL DESCRIPTION	**TYPE OF DISCHARGE**
Legal Description: NE ¼, E ½, Sec. 3, T22N, R8W, Dunklin County Latitude/Longitude: See Page Two Receiving Stream: St. Francis River (P)	

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0121827
Owner:	Associated Electric Cooperative, Inc. (AECI)
Address:	P.O. Box 754, Springfield, MO 65801
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	AECI, St. Francis Power Plant
Facility Address:	Rt. 1, Box 441, Campbell, MO 63933
Legal Description:	NE ¼, E ½, Sec. 3, T22N, R8W, Dunklin County
Latitude/Longitude:	See Page Two
Receiving Stream:	St. Francis River (P)
First Classified Stream and ID:	St. Francis River (P)(02968)
USGS Basin & Sub-watershed No.:	(08020203-030002)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See Page Two

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date

Edward Galbraith, Director of Staff, Clean Water Commission

FACILITY DESCRIPTION (continued)

Outfall #001 - SIC #4911
Discharge of the cooling tower blowdown from unit 1 at a design flow rate of approximately 0.7 MGD. Latitude: +3635114 Longitude: -09010434

Outfall #002 - SIC #4911
Discharge from the oil water separator from unit 1 at a design flow rate of 1.4 MGD, which represents part of the total categorical low volume waste discharge from this unit.
Latitude: +3635114 Longitude: -09010434

Outfall #003 - SIC #4911
Discharge from the cooling tower pond which contains the total flow from Outfalls #001 and #002 that serves unit 1 plus the backwash water from the non "ion exchange" water treatment process at a flow rate of approximately 1.4 MGD. This outfall will be the sampling point for pollutants of water quality concern. Latitude: +3635078 Longitude: -09010478

Outfall #004 - SIC #4911
Discharge point from the storm water collection basin from the entire power plant complex. This outfall was eliminated by a no exposure certification. This permit authorizes the continued use of existing or new storm sewers where there is no exposure of industrial materials and activities to rain, snow, snowmelt and/or runoff to convey uncontaminated storm runoff. Such outfalls do not require monitoring or limitations. Design Flow is 2.9 MGD. Latitute: +3635114 Longitude: -09010434

Outfall #005 – SIC #4911
Discharge of cooling tower blow down from unit 2 at a design flow rate of approximately
0.7 MGD. Latitude: +3635059 Longitude: -09010356

Outfall #006 – SIC #4911
Discharge from the oil water separator from unit 2 at a design flow rate of 0.58 MGD, which represents part of the total categorical low volume waste discharge from this unit.
Latitude: +3635059 Longitude: -09010356

Outfall #007 – SIC #4911
Discharge from the cooling tower pond which contains the total flow from outfalls #005 and #006 that serves unit 2.
Latitude: +3635059 Longitude: -09010356. Design flow is 1.26 MGD.

All outfalls combine and discharge into a closed oxbow, which flows via a surface and subsurface route to an open oxbow of the St. Francis River. This discharge point is located in the NE ¼, E ½, Sec. 3, T22N, R8E, of Dunklin County, Missouri.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 - Cooling Tower Blow down – Unit 1						
Flow	MGD	*		*	daily	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/month	grab
pH Units	SU	**		**	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.						
Outfall #002 - Oil Water Separator – Unit 1						
Flow	MGD	*		*	once/month	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/month	grab
Oil and Grease	mg/L	20		15	once/month	grab
pH Units (Note pH-1)	Minutes of pH – Excursion per month			446	continuous	continuous
pH Units (Note pH-1)	Number of pH – Excursion incidents lasting more than 60 minutes per month			0	continuous	continuous
Note pH – 1 - an excursion occurs anytime the pH is outside of the 6.0 to 9.0 range.						
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #003 - Cooling Water Pond – Unit 1						
Flow	MGD	*		*	once/month	24 hr. estimate
pH - Units	SU	*****		*****	once/month	grab
Total Suspended Solids	mg/L	*		*	once/month	grab
Oil & Grease	mg/L	15		10	once/month	grab
Free Available Chlorine****	mg/L	0.5		0.2	once/month	grab
Temperature	°F	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE_____.						
Whole Effluent Toxicity (WET) Test	% Survival	(See Special Condition 10)			In year 1 and 5 of the permit	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED ONCE EVERY 5 YEARS ; THE FIRST REPORT IS DUE October 28, 2001.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #004 – Storm water	ELIMINATED – SEE FACILITY DESCRIPTION					
Outfall #005 – Cooling Tower Blow down – Unit 2						
Flow	MGD	*		*	Daily	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/month	grab
pH Units	SU	**		**	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE January 28, 2001.						
Outfall #006 – Oil Water Separator – Unit 2						
Flow	MGD	*		*	once/month	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/month	grab
Oil and Grease	mg/L	20		15	once/month	grab
pH - Units (Note pH – 1)	Minutes of pH – Excursion per month			446	continuous	continuous
pH - Units (Note pH – 1)	Number of pH – Excursion incidents lasting more than 60 minutes per month			0	continuous	continuous
Note pH – 1 - an excursion occurs anytime the pH is outside of the 6.0 to 9.0 range.						
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY;THE FIRST REPORT IS DUE _____.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
Outfall #007 – Cooling Water Pond - Unit 2						
Flow	MGD	*		*	once/month	24 hr. estimate
pH - Units	SU	*****		*****	once/month	grab
Total Suspended Solids	mg/L	*		*	once/month	grab
Oil & Grease	mg/L	15		10	once/month	grab
Free Available Chlorine****	mg/L	0.5		0.2	once/month	grab
Temperature	°F	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____ .						
Whole Effluent Toxicity (WET) Test	% Survival	(See Special Condition 10)			In year 1 and 5 of permit	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE_____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

*** Reserved

**** Free Available Chlorine is defined in 40 CFR 423.11. Use a method that has a detection limit of 0.13 mg/L or lower.

***** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0 – 10.5 pH units.

C. SPECIAL CONDITIONS

1. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

3. All outfalls must be clearly marked in the field.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

6. Permittee is not allowed to use any cooling tower maintenance chemicals which contain Priority Pollutants including chromium or zinc.

C. SPECIAL CONDITIONS

7. Discharge of wastewater from the facility must not alone or in combination with other sources cause the receiving stream to violate the water temperature and water temperature differential specified in the Missouri Water Quality Standards. This permit does not have a temperature limit at outfall 003 and 007 because there is no reasonable potential for water quality standards for heat to be exceeded. AECI has applied Best Available Technology (BAT) (cooling towers) at this facility.

8. The permittee is not allowed to discharge chemical/ metal cleaning wastes that contain copper and iron. Permittee shall collect data on chemical/ metal cleaning waste for the duration of the permit cycle to be evaluated at the next renewal.

9. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#003	100%	Annually	24hr composite when biocide is in effluent	August
#007	100%	Annually	24 hr composite when biocide is in effluent	August

(a) Test Schedule and Follow-Up Requirements

(1) Perform a SINGLE-dilution test in the months and at the frequency specified above. For tests which are successfully passed, submit test results USING THE DEPARTMENT'S WET TEST REPORT FORM #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.

(a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.

(b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.

(c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.

(d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.

(e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.

(f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.

(g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.

(h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.

(i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.

(j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.

(k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.

(l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.

(m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.

(2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.

(3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.

(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(4) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.

(5) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

(6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(7) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(8) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department’s WET test report form that was generated during the reporting period.

(10) Submit a concise summary in tabular format of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other Federal guidelines as appropriate or required.

(2) To pass a multiple-dilution test:

(a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,

(b) For facilities with an AEC greater than 30% the LC50 concentration must be greater than 100%; **AND**,

(c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

(c) Test Conditions

(1) Test Type: Acute Static non-renewal

(2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS.

(3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.

(4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(5) Single-dilution tests will be run with:

(a) Effluent at the AEC concentration;

(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and

(c) reconstituted water.

(6) Multiple-dilution tests will be run with:

(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;

(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and

(c) reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

(8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Water Quality Review Sheet
Determination of Effluent Limits

Facility Information

Facility Name: AECI, St. Francis Power Plant NPDES: MO-0121827

Facility Type/Description: Gas fired steam electricity generation with cooling towers

8-Digit HUC: 08020203-030002 County: Dunklin County

Legal Description: Sec. 3, T22N, R8E

Latitude/Longitude: +3635114/-09010434

Water Quality History and Special Problems: Algae forms in stormwater ponds. 40 CFR 423 regulations pertain to this facility.

Outfall Characteristics

Outfall	Design Flow (Cfs)	Treatment Type	Receiving Waterbody	Main Contaminant of Concern
001	1.08	Sedimentation	Outfall 003	pH
002	0.9	Oil Separation	Outfall 003	Oil/Grease
003	2.17	Sedimentation	Oxbow of St. Francis River	Oil/Grease, Chlorine
004	4.5	Eliminated	Oxbow of St. Francis River	
005	1.08	Sedimentation	Outfall 007	pH
006	0.9	Oil Separation	Outfall 007	Oil/Grease
007	1.96	Sedimentation	Oxbow of St. Francis River	Oil/Grease, Chlorine

Receiving Waterbody Information

Waterbody	Class	7z10 (Cfs)	*Designated Uses	Other Characteristics
St. Francis River	P	0	AQL, LWW, IRR, WBC, BTG	Discharge is to oxbow

*Cool water fishery (clf), cold water fishery (cdf), irrigation (irr), industrial (ind), boating & canoeing (btg), drinking water supply (dws), whole body contact recreation (wbc), protection of warmwater aquatic life and human health (aql), livestock and wildlife watering (lww)

Permit Limits and Information

TMDL Watershed: Yes __ No X Disinfection Waiver: Yes ___ No ___ NA X
W.L.A. Study Conducted: Yes ___ No X 303d Waterbody: Yes ___ No ___ NA X
Disinfection Required: Yes ___ No X Violations: Yes ___ No X

Outfall # 001

Wet Test: Yes ___ No X Frequency: _____ A.E.C. _____ Limit: _____

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow Total Suspended Solids mg/L	Report 100		Report 30
pH	6-9		6-9

Receiving Water Monitoring Requirements

Outfall # 002

Wet Test: Yes ___ No X Frequency: _____ A.E.C. _____ Limit: _____

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow MGD	Report		Report
Total Suspended Solids mg/L	100		30
pH	6-9		6-9
Oil and Grease mg/L	20		15

Outfall # 003

Wet Test: Yes X No __ Frequency: Yearly___ A.E.C. 100_ Limit: _No Sig. Mort

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow MGD	Report		Report
pH SU	6-10.5		6-10.5
Total Suspended Solids mg/L	*		*
Oil and Grease mg/L	1.5		10
Free Available Chlorine mg/L	0.5		0.5
Temperature °F	*		*

Outfall # 005

Wet Test: Yes __ No X Frequency: ____ A.E.C. ___ Limit: _____

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow MGD Total Suspended Solids mg/L	Report 100		Report 30
pH SU	6-9		6-9

Outfall # 006

Wet Test: Yes __ No X Frequency: ____ A.E.C. ___ Limit: _____

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow MGD	Report		Report
Total Suspended Solids mg/L	100		30
Oil and Grease mg/L	20		15

Outfall # 007

Wet Test: Yes X No __ Frequency: Yearly A.E.C. 100% Limit: No Sig. Mort

Parameter	Daily Maximum	Weekly Average	Monthly Average
Flow MGD	Report		Report
pH SU	6-10.5		6-10.5
Total Suspended Solids mg/L	*		*
Oil and Grease mg/L	15		10
Free Available Chlorine mg/L	0.5		0.5
Temperature °F	*		*

Facility Description and Rationale

Associated Electric Cooperative, Inc., PO Box 754, Springfield, MO 63801, has applied for the renewal of the permit for a 500 MW natural gas fired steam electric plant. The power plant is located in the NE ¼, E ½, Sec. 3, T22N, R8E, Dunklin County. The Standard Industrial Classification (SIC) code that applies to this electric power plant is 4911.

The description of all outfalls are as follows:

Outfall #001 - discharge of the cooling tower blowdown at a design flow rate of 0.7 MGD.

Outfall #002 - discharge from the oil water separator at a design flow rate of 1.4 MGD, which represents the total categorical volume waste discharge from this facility.

Outfall #003 - discharge from the cooling tower pond which contains the total flow from Outfalls #001 and #002 plus the backwash water from the non "ion exchange" water treatment process at a flow rate of approximately 1.4 MGD.

Outfall #004 - discharge point from the storm water collection basin from the entire power plant complex. Discharge will be dependent upon rainfall. Design flow is 2.9 MGD. This outfall has a no exposure certification and is not sampled.

Outfall #005 - discharge of cooling tower blow down from unit 2 at a design flow of 0.58 MGD, which represents part of the total categorical low volume waste discharge from this unit.

Outfall #006 - discharge from the oil water separator from unit 2 at a design flow of 0.58 MGD, which represents part of the total categorical low volume waste discharge from this unit.

Outfall #007 - discharge from the cooling tower pond which contains the total flow from outfalls 005 and 006 that serves unit 2 plus the backwash water from the non "ion exchange" water treatment process at a flow rate of approximately 1.26 MGD.

Technology Based Effluent Limitations

Regulations promulgated at 40 CFR §122.44(a) require technology based effluent limitations to be placed in NPDES permits based on National effluent limitations guidelines and standards, Best Professional Judgement (BPJ), or a combination of the two. Discharge from Outfall #001 and Outfall #003 are subject to effluent limitations given in 40 CFR §423.15, New Source Performance Standards (NPDES).

Categorical Limits

40 CFR §423.15(m) states that "At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitations instead of the mass based limitations specified in paragraphs (c) through (i) of this section. Concentration limitations shall be those specified in this section." The categorical permit limitations for this draft permit are expressed in concentration and are applied to Outfall #001, Outfall #002, Outfall #003, Outfall #004, Outfall #005, Outfall #006, and Outfall #007.

40 CFR §423.15(n) states that: "In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (m) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

The following categorical limit applies to all outfalls and can be found in 40 CFR §423.15 (a).

Pollutant	Daily Maximum	Monthly Average
pH	6.0-9.0 SU	6.0-9.0 SU

40 CFR § 423.15 (b) states, "There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid." This has been made a special condition of the permit.

The categorical limits for cooling tower blowdown are found in 40 CFR §423.15 (j)(l) and are listed below.

Pollutant	Daily Maximum	Monthly Average
Free Chlorine	0.5 mg/L	0.2 mg/L
Chromium, total	0.2 mg/L	0.2 mg/L
Zinc, total	1.0 mg/L	1.0 mg/L
The 126 priority pollutants	No detectable amount	No detectable amount

The company has stated that no chemicals containing chromium, zinc, or the 126 priority pollutants will be used, so monitoring for them is waived.

The categorical limits for low volume waste source flowing through the oil water separator are found in 40 CFR § 423.15 (c) and are listed below. Low volume waste sources are defined in 40 CFR § 423.11.

Pollutant	Daily Maximum	Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil and Grease	20.0 mg/L	15.0 mg/L

Outfalls 003 and 007 include flow directly from the ion exchange water treatment system which is considered a low volume waste source and include commingled waste streams from the cooling tower and oil water separator. Categorical limits for all sources would be imposed at outfalls 003 and 007. The following limits and monitoring are proposed at outfalls 003 and 007 based on categorical limits.

Pollutant	**Daily Maximum**	**Monthly Average**
pH	6.0-9.0 su	6.0-9.0 su
TSS	100.0 mg/L	30.0 mg/L
Oil and Grease	20.0 mg/L	15.0 mg/L
Free chlorine	0.5 mg/L	0.2 mg/L
Chromium, total	0.2 mg/L	0.2 mg/L
Zinc, total	1.0 mg/L	1.0 mg/L
The 126 priority pollutants	No detectable amount	No detectable amount

The company has stated that no chemicals containing chromium, zinc, or the 126 priority pollutants will be used, so monitoring for them is waived.

10 CSR 20.7.031 (3)(I) states that the requirements of section (4)(B), "Toxic Substance," shall be met. Therefore, whole effluent toxicity tests are proposed. Section (4)(B) states that water contaminants shall not cause the criteria in Tables A and B of the Water Quality Standards to be exceeded. The Water Quality Standards should be protected by the numbers listed in the Water Quality Review Sheet. Effluent limitations for total suspended solids (TSS) and pH are typical for industrial discharges and are known to be protective of beneficial stream uses. Oil and grease limits were established using best professional judgement of the permit writer. Petroleum based limits for oil and grease was established to comply with 10 CSR 20.7.031 (3)(B) and should be consistent statewide with other industries that have petroleum based limits. Free chlorine is proposed to have the same federal limits as a result of implementing whole effluent toxicity test and the proposed water quality impact study listed in the special conditions.

Because cooling towers are used at this facility, temperature at the 003 and 007 outfalls are not expected to be a problem. It is a monitoring only parameter for outfalls 003 and 007.

Reviewer: Tim Stallman
Date: 6/15/06
Unit Chief: Refaat Mefrakis

Monitoring and effluent limits contained within this document have been developed in accordance with EPA quidelines using the best avvailable data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.